US Army Medical Research and Materiel

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Prophylactic and Therapeutic Monoclonal Antibodies

This invention provides a new vaccinia immune globulin (VIG) composition which can serve as a replacement for the current VIG. The novel VIG is composed of a combination of one or more monoclonal antibodies (mAbs) against vaccinia intracellular mature virions (IMV) antigens (to include anti-L1R antibody) and one or more vaccinia extracellular enveloped virions (EEV) antigens (to include anti-A33R antibody).

Poxviruses are members of the family *Poxviridae* and include vaccinia virus (VACV), which is the current smallpox vaccine, and variola virus, which is the virus that causes smallpox. Assembly of VACV virions begins with condensation of dense granular material into membrane-wrapped particles called the IMV. VACV virions are later released from the cell as EEV. Both IMV and EEV virions are infectious forms of VACV, and EEV plays a role in the long-range spread of the virus within the host.

VIG is used as a treatment for complications of vaccination with VACV (e.g., disseminated VACV infection in immuno-compromised individuals). Drawbacks to using VIG to treat infections include the need to screen blood from human volunteer donors for HIV and hepatitis B [illegible]se. Also, the VIG product lots can vary [illegible]ntly between batches and geographic regions. Therefore, a need exists to provide a VIG composition which is safe and precisely defined, and which does not rely on human donors. A mixture of mAbs against specific VACV IMV and EEV immunogens may be used for the [illegible]on, and/or therapeutic treatment of VACV [illegible]s, and possibly other poxvirus infections.

Features and advantages:

- **Includes a neutralizing mAb against the VACV L1R gene product, an VACV IMV antigen**
- **Includes a mAb against the A33R gene product, a VACV EEV antigen**
- **New VIG combines mAbs against L1R and A33R with other mAbs against H3L, D8L, A27L, B5R, or A17L**

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